

**Amendments to the Claims:**

This listing of claims will replace all prior version, and listings, of claims in the application:

**Listing of Claims:**

1-8 (Cancelled).

9. (Original) A genetic cartridge designated ITR.

10. (Currently Amended) A genetic cartridge designated ITR1.1k, wherein ITR1.1k is as shown in FIG. 25.

11. (Original) A vector designated pXL-Bac as shown in FIG. 3.

12. (Original) A vector designated pXL-BacII-ECFP as shown in FIG. 24.

13. (Currently Amended) A vector designated pBSII-ITR1.1k-ECFP as shown in ~~FIG.~~ FIGs. 24 and 25

14. (Currently Amended) A method of constructing a mobilized and operational transposable *piggyBac piggyback* vector, said method comprising:

- (a) obtaining inserting a DNA molecule according to ~~claim 1~~ claim 20; and
- (b) inserting the DNA molecule into a recipient plasmid; and
- ~~— (b) converting the recipient plasmid into an operational transposable sequence by means of a *piggyBac piggyback* transposon gene or a protein.~~

15. (Currently Amended) A method of constructing a mobilized and operational transposable *piggyBac piggyback* vector, said method comprising:

- (a) obtaining inserting a DNA molecule according to ~~claim 2~~ claim 23; and
- (b) inserting the DNA molecule into a recipient plasmid; and

~~— (b) converting the recipient plasmid into an operational transposable sequence by means of a *piggyBac* *piggyback* transposon gene or a protein.~~

16. (Currently Amended) A method of converting a plasmid into a functional *piggyBac* *piggyback* transposon, said method comprising:

- (a) obtaining the cartridge of claim 9; and
- (b) inserting said cartridge into the plasmid.

17. (Currently Amended) A method of converting a plasmid into a functional *piggyBac* *piggyback* transposon, said method comprising:

- (a) obtaining the cartridge of claim 10; and
- (b) inserting said cartridge into the plasmid.

18. (Currently Amended) A DNA construct for transforming a cell, said construct comprising the DNA molecule of ~~claim 1~~ claim 20 and further comprising a DNA molecule to be transferred to the cell.

19. (Currently Amended) A DNA construct for transforming a cell, said construct comprising the DNA molecule of ~~claim 2~~ claim 23 and further comprising a DNA molecule to be transferred to the cell.

20. (New) A DNA molecule comprising a minimal transposable *piggyBac* genetic construct having:

- (1) a spacer of at least 40 nucleotide base pairs; and
- (2) at least one of the following 5' and 3' minimal sequences having a terminal repeat domain adjacent to at least one end of the spacer:
  - (a) a 5' minimal sequence comprising a TTAA target site and the 35 nucleotide base pairs of the 5' terminal repeat domain of the *piggyBac* molecule; and
  - (b) a 3' minimal sequence comprising a TTAA target site and the 63 nucleotide base pairs of the 3' terminal repeat domain of the *piggyBac* molecule.

21. (New) The molecule of claim 20, wherein the 5' terminal repeat domain of the 5' minimal sequence is at one end of the spacer, and wherein the 3' terminal repeat domain of the 3' minimal sequence is at the other end of the spacer.

22. (New) The molecule of claim 20, wherein the spacer is at least 55 nucleotide base pairs.

23. (New) A DNA molecule comprising a minimal transposable *piggyBac* genetic construct having:

- (1) a spacer of at least 40 nucleotide base pairs; and
- (2) at least one of the following 5' and 3' minimal sequences having a terminal repeat domain adjacent to at least one end of the spacer:
  - (a) a 5' minimal sequence comprising a TTAA target site, the 35 nucleotide base pairs of the 5' terminal repeat domain of the *piggyBac* molecule, and more than 66 nucleotide base pairs of the adjacent 5' internal domain sequence of the *piggyBac* molecule; and
  - (b) a 3' minimal sequence comprising a TTAA target site, the 63 nucleotide base pairs of the 3' terminal repeat domain of the *piggyBac* molecule, and at least 172 nucleotide base pairs of the adjacent 3' internal domain sequence of the *piggyBac* molecule.

24. (New) The molecule of claim 23, wherein the 5' terminal repeat domain of the 5' minimal sequence is at one end of the spacer, and wherein the 3' terminal repeat domain of the 3' minimal sequence is at the other end of the spacer.

25. (New) The molecule of claim 23 wherein the 5' minimal sequence comprises at least 241 nucleotide base pairs of the adjacent 5' internal domain sequence of the *piggyBac* molecule.

26. (New) The molecule of claim 23 wherein the 5' minimal sequence comprises at least 276 nucleotide base pairs of the adjacent 5' internal domain sequence of the *piggyBac* molecule.

27. (New) The molecule of claim 23, wherein the spacer is at least 55 nucleotide base pairs.

28. (New) A transposable genetic construct comprising a DNA molecule to be transferred flanked by a pair of transposon terminal inverted repeat nucleotide sequences from the *piggyBac* transposon, the pair of transposon terminal inverted repeat nucleotide sequences being either a pair of:

- (1) 5' minimal sequences comprising a TTAA target site, the 35 nucleotide base pairs of the 5' terminal repeat domain of the *piggyBac* molecule, and optionally more than 66 nucleotide base pairs of the adjacent 5' internal domain sequence of the *piggyBac* molecule; or
- (2) 3' minimal sequences comprising a TTAA target site, the 63 nucleotide base pairs of the 3' terminal repeat domain of the *piggyBac* molecule, and optionally at least 172 nucleotide base pairs of the adjacent 3' internal domain sequence of the *piggyBac* molecule.

29. (New) The construct of claim 28, wherein the pair of transposon terminal inverted repeat nucleotide sequences is a pair of 5' minimal sequences comprising a TTAA target site, the 35 nucleotide base pairs of the 5' terminal repeat domain of the *piggyBac* molecule, and more than 66 nucleotide base pairs of the adjacent 5' internal domain sequence of the *piggyBac* molecule.

30. (New) The construct of claim 29, wherein the pair of 5' minimal sequences comprise at least 241 nucleotide base pairs of the adjacent 5' internal domain sequence of the *piggyBac* molecule.

31. (New) The construct of claim 30, wherein the pair of 5' minimal sequences comprise at least 276 nucleotide base pairs of the adjacent 5' internal domain sequence of the *piggyBac* molecule.

32. (New) The construct of claim 28, wherein the pair of transposon terminal inverted repeat nucleotide sequences is a pair of 3' minimal sequences comprising a TTAA target site, the 63 nucleotide base pairs of the 3' terminal repeat domain of the *piggyBac* molecule, and at least 172 nucleotide base pairs of the adjacent 3' internal domain sequence of the *piggyBac* molecule.